

CLAIMS

1. An electronic component mounting apparatus for mounting electronic components to a substrate while heating the electronic components, each of the 5 electronic components having an adhesive layer on a surface to be bonded to the substrate, the apparatus comprising:

an electronic component feeder for feeding the electronic components;
a substrate retainer for retaining the substrate;
a mounting head provided with a plurality of holding tools for individually 10 holding the electronic components, and electronic component heating devices for heating the plurality of electronic components held by the holding tools;

a mounting mechanism for transferring the mounting head from the electronic component feeder to the substrate retainer, and mounting the plurality of electronic components to the substrate by using the plurality of 15 holding tools; and

a controller for controlling the mounting mechanism,
wherein the electronic component heating devices heat the electronic components from a moment when the holding tools pick up the electronic components at the electronic component feeder until another moment when the 20 holding tools release the electronic components after mounting them to the substrate, and

the controller controls the mounting mechanism in a manner that a first heating time of a duration from the moment when the holding tool comes into contact with the electronic component for picking it up till another moment 25 immediately before the holding tool begins a mounting motion to the substrate is longer than a second heating time of a duration from the moment when the holding tool begins the mounting motion till another moment when the holding

tool leaves the electronic component mounted to the substrate.

2. The electronic component mounting apparatus according to claim 1,
wherein the electronic component heating devices comprise heaters disposed
5 individually to the holding tools.

3. The electronic component mounting apparatus according to claim 1,
wherein the electronic component heating devices comprise non-contact type
heating devices for heating the plurality of holding tools without being in
10 contact thereto.

4. The electronic component mounting apparatus according to claim 1,
wherein the substrate retainer is provided further with a substrate heater for
heating the substrate.

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5.. The electronic component mounting apparatus according to claim 1
further comprising an electronic component recognition unit for taking an
image of the plurality of electronic components held by the holding tools and for
recognizing a position of the electronic components, wherein the electronic
20 component recognition unit takes the image of the plurality of electronic
components within the duration of the first heating time.

25 6. An electronic component mounting method for mounting electronic
components to a substrate while heating the electronic components, each of the
electronic components having an adhesive layer on a surface to be bonded to the
substrate, the method comprising:
an electronic component holding step for repeating a pick-up motion to pick

up the electronic components supplied by an electronic component feeder one after another in a successive manner with each of a plurality of holding tools provided on a mounting head;

5 a mounting head transferring step for moving the mounting head, after the electronic component holding step, to a position above a substrate retainer retaining the substrate;

an electronic component mounting step for repeating a mounting motion, after the mounting head transferring step, to mount the electronic components to the substrate by vertically shifting the plurality of holding tools one after 10 another in a successive manner; and

15 an electronic component heating step for heating the electronic components from a moment when the holding tools come into contact with and pick up the electronic components at the electronic component feeder until another moment when the holding tools release and leave the electronic components after mounting them to the substrate retained on the substrate retainer,

wherein the electronic component heating step comprises a first heating time of a duration from the moment when the holding tool comes into contact with the electronic component for picking it up till another moment immediately before the holding tool begins a mounting motion to the substrate, 20 and a second heating time of a duration from the moment when the holding tool begins the mounting motion till another moment when the holding tool leaves the electronic component mounted to the substrate, and the first heating time is set longer than the second heating time.

25 7. The electronic component mounting method according to claim 6, wherein the electronic component heating step is carried out by heaters disposed individually to the holding tools.

8. The electronic component mounting method according to claim 6,
wherein the electronic component heating step is carried out by non-contact
type heating devices for heating the plurality of holding tools without being in
5 contact thereto.

9. The electronic component mounting method according to claim 6,
wherein the electronic components are mounted in the electronic component
mounting step onto the substrate heated beforehand.

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10. The electronic component mounting method according to claim 6
further comprising an electronic component recognizing step for taking an
image of the plurality of electronic components held by the holding tools and for
recognizing a position of the electronic components with an electronic
15 component recognition unit, wherein the image of the plurality of electronic
components is taken by the electronic component recognition unit within the
duration of the first heating time.